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THE EARLY DEBATE ON FINANCIAL AND PHYSICAL CAPITAL

Abstract: This paper evidences the contribution of leading writers in the early 1900s to the vexed problems associated with capital maintenance and periodic income determination. It reveals that the issues which were then being discussed (such as the treatment of holding gains) remain as unresolved problems for today's accountancy practitioners.

The concept of capital is central to the determination of periodic income, irrespective of whether the latter is based on the principles of economics or accounting. Without adequate and consistent definitions and computations of capital at succeeding points of time, there can be no credible income data. This has been well evidenced in the recent professional prescriptions of current cost accounting for external financial reporting purposes.[1] These pronouncements have focused attention on the need to understand the concept of capital which underlies each specific income proposal. In particular, they have identified the existence in practice of two alternative capital maintenance approaches—that is, maintenance based on capital defined in terms either of a specific monetary attribute such as the money unit or the purchasing power unit (hereafter termed *financial* capital); or a specific attribute of the reporting entity's physical asset structure such as its physical units or operating capacity (hereafter termed *physical* capital).

The distinction between the two concepts of capital (and their related maintenance functions) is not a new one. Sweeney (1933a), for example, presented one of the best analyses in this area, and his work should be required reading for interested students of capital definition and measurement. However, despite its antecedents, the distinction has provoked a debate in the late 1970s and early 1980s concerning the utility and relevance of the financial and physical approaches for purposes of external financial reporting. Indeed, a recent international symposium has been held on the sub-

This paper has benefited considerably from the comments of its reviewers.

ject.[2] Contributions to this meeting discussed the relative merits of financial capital and physical capital and, in so doing, identified significant problem areas for the producer of current cost accounting information which utilises a physical capital maintenance approach—for example, the needs of external report users, the accounting treatment of holding gains, coping with changing asset structures and technologies, accounting for price decreases as well as increases, the feasibility of using current values in financial reports, and alternatives to current cost accounting.

It should not be surprising to find these matters debated in the 1980s. After all, if current cost accounting contains these problems, it is only right and proper to discuss them with a view to the establishment of current cost accounting as a credible system of financial reporting. However, it is of some concern to find the discussion taking place *ex post* the prescription of current cost accounting. What is even more disturbing is the discovery that the same issues were identified and debated in the early 1900s. Indeed, in 1930,[3] a symposium on asset value appreciation covered much of the ground dealt with in the aforementioned one in 1981. And resolution of the issues identified at that time is no further forward despite the passage of 50 years of thought and experience.

Not only was the debate about financial capital and physical capital raised in the early 1900s, it was also fully documented in the relevant accountancy literature, and contributed to by some of the leading academics and practitioners of the day. It was largely of United States origin, considerably influenced by German thinking, and can be attributed to a major concern about the purpose and role of both appreciation and depreciation of fixed assets.[4] The lack of legal and accounting guidance in these matters in the last quarter of the nineteenth century and first quarter of the twentieth century were also catalysts for the debate. According to Brief (1976), revaluation of fixed assets was common, depreciation accounting was relatively undeveloped, the realisation principle was not fully recognised prior to World War I, and lawyers did not appear to wish to pronounce on business practices and thereby give guidance to accountants.

The interest in the United States debate petered out in the 1940s largely due to the impact of World War II; was resumed at a very modest level in the 1950s and 1960s (when relatively low rates of inflation prevailed); and burst into full prominence in the 1970s with double digit inflation. It has not diminished since despite the practical implementation of current cost accounting in several English-

speaking countries.[5] It therefore appears pertinent to go back in time to rediscover the early contributions to the debate—first, to acknowledge their significance in the development of financial reporting thought; secondly, to identify the main issues with which they were concerned and to compare them, where relevant, with the issues of today; and, thirdly, to speculate from such an analysis on the reasons why no apparent progress has been achieved in the United States and, to a lesser extent, in the United Kingdom in the resolution of the capital debate. In this way, it is hoped that lessons from the past may be learned in order to avoid lack of progress in the future.

Early Recognition of the Problem

It can be argued that the earliest accounting practitioners of the modern era recognised the need to maintain the physical asset structure of the reporting entity, and to implement methods of financial accounting which could aid this process. Brief (1976) provides a reminder that, prior to 1875, the practice of replacement accounting (that is, charging the cost of fixed asset replacement against sales revenue in arriving at periodic income) was fairly widespread, and was adopted in place of conventional depreciation policies. Income was therefore determined on a quasi-replacement cost basis with the balance sheet containing outdated and undepreciated historic costs. The replacement costs used for income purposes, however, were those occurring at the time of replacement rather than at the time of reporting. The practice was apparently limited to replaced fixed assets, and its use can be confirmed in the United States railway industry which was governed by the regulations of the Interstate Commerce Commission (which specified the use of replacement accounting).[6]

There was also evidence of revaluation of fixed assets prior to 1875, and an awareness of the danger of distributing any resulting unrealised holding gains.[7] But, gradually, a more conservative approach to accounting was adopted, and historical cost depreciation practices to maintain invested money capital were implemented.[8] Also, at about the same time, a further accounting practice was being advocated—that is, the *appropriation* of amounts from income to reserve (in excess of historical cost depreciation) in order to aid the funding of fixed asset replacements.[9]

Thus, although the conventional depreciation practices of the time may have been relatively primitive (that is, appropriations of income rather than cost allocations), there was an obvious aware-

ness by certain leading accountants of the day that adequate accounting could aid the function of *financing* the reporting entity's physical asset structure. However, a contrary view existed which, despite recognising the potential financial problem of inadequate depreciation to fund fixed asset replacement, preferred to depreciate historical costs and not to recognise value changes, either because of the danger of overvaluation when prices eventually fell after a period of rising[10] or because the entity was a going concern which was unaffected financially by the recognition of unrealised holding gains—these ultimately being realised at some future date.[11]

The latter historical cost school of thought appeared to prefer the financial capital approach of maintaining the original invested capital. The alternative approaches of replacement accounting and reserve accounting indicated a movement towards physical capital maintenance without abandoning the traditional historical cost system. In addition, a further school of thought was to develop in the early 1920s—balance sheet revaluations being encouraged (usually based on replacement costs) to provide more realistic descriptions of entity financial position, but with the income statement recommended to continue on a historical cost basis, thus not reflecting a maintenance of the revalued position.[12] In this way, realised holding gains were included in the income statement and unrealised holding gains were put to reserve. By contrast, replacement accounting and reserve accounting effectively excluded a certain proportion of realised holding gains from income, and historical cost accounting failed to recognise unrealised holding gains.

These different contributions mark a useful starting point for the debate on capital and capital maintenance—particularly in the 1920s and 1930s.[13] They reveal the first major problem facing accountants in this area—that is, the difficulty of separating the *managerial* need to fund the replacement of assets underlying invested capital from the *accounting* need to maintain that capital. This particular problem was first made explicit in the literature by Saliers (1913) but is also to be found in the work of others throughout the 1920s and 1930s—including Jackson (1921); Scott (1929); Paton (1934); and Crandell (1935). At times, it is somewhat difficult to distinguish the two functions in the recommendations of these writers, and this is perhaps best evidenced in the words of the accountants concerned.

Bauer produced the following major statement of the problem:[14]

> The question therefore arises, is the purpose of management merely to maintain investment in terms of dollars, and to show current costs and profits accordingly, or is it really

> to keep up the plant and equipment and to maintain the physical productivity of the property?

He obviously identified the managerial task of asset replacement, and linked it with the accounting process of capital maintenance. He therefore appeared to see no need to separate the two functions, and was quite clear in his accounting answer to the managerial question posed—the expected cost of replacement and not historical cost should be matched against sales revenue. He went even further than modern theorists in this respect, appearing to advocate the use of *future* rather than current replacements costs.

Jackson asked the same question in a much briefer manner:[15]

> Is the purpose of the depreciation charge to maintain the capital investment or is it to replace the physical plant?

It should be noted that the question was asked solely in connection with fixed asset replacement, and this appeared to be the major preoccupation of these early accounting theorists (working capital being usually ignored). Jackson argued that historical cost was the true cost for accounting purposes (without defining the term "true"), and advocated financial capital maintenance based on historical costs. However, as the above quotation reveals, accounting and managing are completely merged in the question asked.

Rorem was much less confused but arguably no less confusing, fully recognising the alternative physical capital basis for accounting:[16]

> The purpose of writing the appreciated value into the cost of manufacturing is entirely independent of any accounting procedure for insuring the maintenance of physical capital. It is true, that physical capital must be maintained if an enterprise is to continue business operations. It is true, however, that an enterprise must be considered unprofitable unless its accounts are so handled as to deduct provision for capital maintenance as a cost of business operations. The charge for depreciation is a writing off of values which have already appeared; it is in no sense a provision for expenses which are yet to be incurred.

Rorem then argued for the use of replacement costs for depreciation purposes, criticising the alternative policy of transfers from income to reserve in addition to historical cost depreciation. He undoubtedly regarded replacement cost accounting as a means of determining the profitability of the entity (the primary aim) while

maintaining physical capital (the secondary aim). His paper clearly and logically makes the case for accounting for the physical structure of the entity, separate from the issue of financially managing asset replacements.

The then radical proposals of Rorem contrasted with the continuing support of leading accountants for historical cost accounting supplemented with income appropriations to reserve. Thomas (1916) had suggested the latter approach to preserve the financial solvency of the entity; Rastall (1920) preferred to reserve prudently to avoid overdepreciation; Jackson (1920) believed the use of historical cost depreciation reflected the "privilege" of using low cost equipment in higher cost times, but thought that additional amounts should be reserved from income; and other similar contributions come from Martin (1927), Scott (1929) and Daniels (1933). Each of these writers appeared to support a financial capital-based approach to income accounting, capital being measured in terms of aggregations of money units comprising historical costs. Some recognised the need also to provide separately for a funding of asset replacement at higher costs by reserve accounting. This approach was well described by Martin:[17]

> Such a reserve has the advantage of keeping the attention of the management and the stockholders centered on the real significance of increases in asset values. If they are to continue the business with the physical capital intact they must provide sufficient net earnings to make possible an increase in the money statement of net worth equal to the difference between original cost and replacement cost.

The above quotation is a useful way of summarising the somewhat confused state of thinking about income accounting and capital maintenance in the 1920s particularly. Financial capital recognition (for example, the money statement of net worth) was a popular approach, coupled with a growing awareness of the need to fund asset replacement and aid this by some form of accounting (for example, transfers to reserve). Managing and preserving the physical structure of the reporting entity was therefore a fairly well-known idea; accounting for its maintenance tended to be relatively crude. Also, it must be noted that the physical structure was normally interpreted in a limited way to nonmonetary fixed assets — inventory and other assets typically being ignored.

Thus, there appeared to be some confusion in the minds of writers between the financial mangement function of replacing entity

assets, and the financial accounting function of reporting on entity profitability and financial position.[18] It would therefore seem relevant to pursue further the early arguments for accounting to aid management or preserve the physical assets and capital of the entity. To do so, may provide clues as to why the writers concerned had difficulty distinguishing between asset management and capital accounting. To do so is important, for the common cry nowadays from companies is—why do we need current cost accounting when we manage effectively with regard to price changes? As the chairman of one United Kingdom company has put it:[19]

> From a management point of view we have all the information we require in our monthly accounting statements to ensure that the full effects of inflation are taken into account in arriving at management decisions and . . . the attached accounts do not provide our management with any additional useful information. . . .

The present United Kingdom current cost accounting provision[20] confuses internal and external accounting needs in its statement of aims, and provides no answer to the above statement.

Managerial Needs and Capital Maintenance

The replacement of assets appeared to be regarded at the end of the nineteenth century as essentially a matter for good management rather than formal accounting procedures.[21] According to Brief (1976), for example, the question of whether or not to provide for fixed asset depreciation was left very much in the hands of management and the internal rules and regulations of the reporting entity—courts of law gave little or no guidance and the accountancy profession was in its infancy. Thus, the accounting emphasis for income determination purposes arguably included some notion of financial capital maintenance in a great many cases, depreciation procedures being largely ignored and revaluations being fairly common.

This picture of self-regulation undoubtedly must have influenced writers in the 1920s and 1930s who were concerned to ensure that management had sufficient relevant information with which to make adequate funding arrangements for fixed asset replacements. Not unexpectedly, writings occasionally merged the separate issues of internal management information systems with external financial reporting.[22] It is therefore important to read them with care.

The use of replacement accounting and reserve accounting procedures appear to have been devices for reflecting the funding of fixed asset replacements (particularly) without interfering with the then traditional practices of accounting based on historical cost measurements and financial capital maintenance (of original invested capital). However, in the first decades of the twentieth century, a number of writers began to advocate the use of replacement costs for internal management information purposes. Paton (1918), for example, argued that managers (and shareholders) needed replacement cost data—to aid the making of management decisions (presumably including asset replacement), and to let shareholders know their rights (presumably referring to the need to disclose total income, including unrealised holding gains).

By 1920, however, Paton (1920) was arguing for the use of replacement cost accounting for management only in order to aid it in preserving physical assets and productive capacity. Canning (1929), while not recommending the use of replacement costs generally for external reporting, believed they might be useful to management for purposes of deciding which goods to buy in the future, and for determining selling prices. Scott (1929), Schmidt (1930), and Wasserman (1931) held relatively similar views on the managerial relevance of replacement costs.

Each of these contributors to the United States literature therefore appears to have had a clear idea of the utility of replacement cost accounting for management purposes, particularly as an aid to funding asset replacement. Some of them also supported its use for external financial reporting, but to a far lesser extent. Occasionally, their recommendations were unclear as to the distinction between internal and external reporting. But it can be concluded that they were reasonably of a single mind with regard to one matter—they did not believe it was essential to account formally for the maintenance of physical capital in order to preserve the physical asset structure of the reporting entity. Instead, they felt that the latter could be aided by reserve transfers of financial capital-based income; and also by an adequate determination of selling prices to be charged to customers. In addition, it should be noted that replacement cost accounting was originally devised as a system of internal management accounting—particular by Paton (1920).

The above comments contrast sharply with the ideas of the Dutch theorist, Limperg (1964). Throughout the 1920s and 1930s, he argued for the use of replacement value-based accounting to aid management in the buying and selling activities associated with its prod-

ucts. He defined replacement value as a measure of the sacrifice by the producer when selling his products or using his assets (Limperg's replacement value referred only to replaceable assets, and was the cost at the time of sale or use of what was technically necessary and economically unavoidable to replace the asset concerned). In addition, he argued for the use of replacement value to determine selling prices. However, he did appear to have a firm view regarding physical capital maintenance (without specifically defining or using the term). His definition of income was essentially a physical capital-based one—holding gains being taken to reserve, and holding losses being treated in the same way until the reserve containing aggregate holding gains was exhausted. Any holding losses thereafter were to be written off against income.

This concept of preserving what Limperg described as the "source of income" was something which he saw as being useful both for internal *and* external reporting purposes—to aid the analysis of business operations, provide sufficient funds to finance asset replacements, and to prevent over-consumption. He felt that, by such a process of capital maintenance, income could be determined "without ambiguity and with certitude"—presumably for all its users. Nevertheless, as with that of Paton in the United States, Limperg's system was devised essentially as one of management accounting—although, undoubtedly, he also felt that external interests such as investors could benefit considerably from the reporting of such management-orientated information. Continuing evidence of this belief is provided by the limited but important use of replacement valuing accounting for external reporting by certain Dutch companies.

Replacement Costs and Selling Prices

Several writers in the 1920s and 1930s made strong statements on the place of replacement costs in the managerial determination of selling prices of goods and services to customers. Paton (1922), in an all too rare paper on accounting for current assets, claimed that replacement cost was the only price relevant to management as it governed the selling price of a good or service in the long-term. Rorem (1929), too, argued that replacement cost accounting was relevant to management because it represented the minimum value established by competition and to be paid when looking forward to the eventual resale of the good or service concerned. For this reason, Rorem went on to argue for the use of replacement costs in external reports because he regarded the difference be-

tween replacement cost and historical cost as the provision for capital maintenance which should be treated as a *cost* of business operations. Daniels (1933) also felt that the customer should be paying for the replacement cost of goods in the long-run (in this case, fixed assets), and thus concluded that the entity's pricing policy should result in income which was sufficient to replace fixed assets at higher costs.[23] He believed the function of depreciation, however, was not to provide for physical capital maintenance (recommending instead the funding of replacement by prudent reserving).

The idea of funding asset replacement by passing on increasing costs to the entity's customers, and thereby hopefully preserving its physical structure, was not universally accepted by the writers of the day. Jackson (1920) thought it unfair to ask customers to pay for anything other than the original cost of fixed assets in the case of public utilities, but thought it fair to charge replacement cost to private enterprise customers (so long as the realised difference between replacement cost and historical cost was taken to reserve). The 1930 Symposium on Appreciation[24] produced an even stronger position. It was argued that only historical costs should be passed on to the consumer because of the danger of being priced out of a competitive market, and that what was really needed in this area was good management rather than amendments to traditional accounting. Littleton (1936) argued along similar lines.

Thus, from these writings, it can be concluded that there was a recognition that management had to make decisions concerning the entity's asset structure, and that financial information was needed for this purpose. Some writers argued for using replacement costs, and others for historical costs. But it was also apparent that there was no general consensus that the use of the former data in external financial reports could provide a more informed way of describing how the physical structure of the entity had been maintained by management. In other words, there appeared to be a growing awareness in the 1920s and 1930s of the need to use replacement costs (*ex ante*) for management decisions, and the possibility of using them (*ex post*) for external reporting—in both cases, the aim being to reflect the need to maintain the physical asset structure of the entity; the first to demonstrate how to provide sufficient funds to finance replacement and the second to report on the maintenance of the capital representing the replaced and replaceable assets. The common factor in all this seemed to be the physical assets of the entity, and this brought into question the purposes of external financial reporting—what was to be reported and to whom was it to be reported?

Aims and Uses

The previous two sections have attempted to show that the early accounting theorists were concerned with asset replacement and the management of financial funds to do so. This inevitably raised the question of whether or not these matters should be the subject of a formal accounting in external financial reports. In other words, should external reports reflect such matters as the maintenance of the physical capital of the entity?

Views varied from one extreme to another. Paton (1918) stated that the physical nature of an asset was only important in terms of its influence on value. Bauer (1919) argued that external accounting should reflect the maintenance of the physical productivity of the assets. Jackson (1921) believed that maintenance of original invested costs was essential. Sweeney (1927 and 1930) complained that maintenance of physical capital did not maintain the general purchasing power of capital which gave the entity command over goods and services. And Daniels (1933) and Littleton (1936) felt that the job of accounting was to allocate past costs and not to value. Therefore, some were for financial capital maintenance (in money value or purchasing power terms) and others favoured physical capital maintenance. Few statements were made by these writers as to why these approaches should be the preferred ones from the point of view of the report users.

Daines (1929), for example, wrote of the objectives of accounting (and of current values) mainly in relation to the dividend decision. However, he also felt that users other than investors should be recognised—but made little effort to specify who these users were. Krebs (1930), too, wrote of unspecified users in relation to accounting for asset appreciation but without amplifying the matter. Littleton (1936) preferred to concentrate on uses rather than users, even arguing against the use of financial accounting data for dividends, taxation, and selling price determination.

Other writers clearly identified investors as the main external user group to which income and capital issues could be related—Paton (1920), when arguing for physical capital maintenance, sympathised with reporting on this for management decision purposes only, and not for investors (holding gains not being treated as distributable income); Schmidt (1930) made a similar argument, and defined distributable income as that remaining after maintaining business assets; and in a later paper, Schmidt (1931) identified distributable income more directly as current operating profit (that is, after full provision for the replacement cost of assets consumed). The Dutch

position, too, as expressed by Limperg (1964), despite its management accounting basis, also appeared to concentrate on the owner/investor as the main external user—replacement value arguments being related to the determination of income for consumption or dividend decisions. All in all, however, the coverage of report users and uses by writers advocating change to traditional practice was poor, and resulted in a significant gap in the financial versus physical capital debate. It was at least partly bridged by proponents of the traditional historical cost school of thought.

The Need for Historical Cost Accounting

Although the aims of financial reporting in the 1920s and 1930s may have been poorly covered in the literature, several writers were adamant in their view of the nature of the process—that is, it was an attempt to reflect what had actually happened in the reporting entity rather than to hypothesise about what might have occurred under different circumstances and transactions. Canning (1929), for example, argued strongly along these lines—that historical costs were needed to calculate income on past transactions; costs are history and nothing can be done to change them; and fictitious data should not be introduced into accounting. Gower (1919) pleaded for the maintenance of invested capital and the use of historical costs, so long as a going concern could be assumed for the reporting entity. Jackson (1920) pointed out that historical costs had actually been transacted, and that replacement costs depended on some as yet nonexistent event. Prudence was given as the main reason for historical cost usage by Mather (1928). Littleton (1928 and 1929) believed income only existed when a sale transaction took place, and that it could not therefore be recognised in the form merely of unrealised asset value changes.

Each of these writers argued against the use of replacement costs, and their main reason appeared to be the need to attempt to reflect in financial reports the income which had been realised through sale transactions. They seemed to regard asset value appreciation as purely fictitious data so long as sale or exchange had not taken place. As previously mentioned, the emphasis was on what had happened. But these arguments were made in relation to external financial reports; several of these writers were at pains to point out the utility of replacement cost accounting for purposes of internal management decisions. In addition, they pinpointed a major problem in income and capital accounting which remains a

contemporary issue—that is, whether or not holding gains are income or capital adjustments.

The Nature of Holding Gains

The early accounting theorists in the income and capital debate were fully aware of the nature and possible existence of holding gains and the problems of accounting for them. Initially termed asset appreciation, the holding gain arose as a reporting issue from the 1920s debate concerning asset values, and gained practical importance because of the possibility of distributing unrealised asset value increases as well as realised gains. However, as a result of the debate concerning the maintenance of physical capital generally, and replacement cost depreciation particularly, the holding gain question was extended to include both realised and unrealised elements. It thus reached a status in the early literature akin to that given to it today.

Paton (1918) was one of the earliest writers on holding gains. He called for their inclusion in income (whether realised or unrealised) in order to let shareholders "know their rights," while preventing balance sheets from being understated (he did not expand on these advocations). However, Paton (1920) soon changed his mind regarding the treatment of holding gains as income—he later argued that they were capital adjustments, thus supporting the physical capital approach and treating holding gains as nondistributable. He gave no reasons for this change of viewpoint.

Jackson (1920) also adopted Paton's latter stance—holding gains in his opinion being funds of the entity belonging to future investors, and thus not to be accounted for until realised. Several years went by following this contribution, until Martin (1927) wrote a paper which relied heavily on the earlier work of Paton. He agreed that holding gains should be recognised and treated as capital adjustments in order to keep managers and investors aware of the historical cost profits required to be retained in order to fund the increased cost of replacing assets.

Two years later, Rorem (1929) produced a major paper arguing for the inclusion of at least realised holding gains in income measurements, although he would have required them to be separately disclosed in the income statement. However, he was very unclear as to his views on the distributability of holding gains—he was fully aware of the need to calculate cost of sales and depreciation on a replacement cost basis in order to provide for the maintenance of

physical capital. But he also believed customers should pay for asset replacement increases through increased selling prices. He made no specific comment on distributable income.

Schmidt (1930 and 1931) was more certain in his approach—holding gains are not income; they cannot be distributed because they may not be realised. In this way, he appeared to support physical capital maintenance, although his argument for the use of replacement costs was for management purposes only in the first paper, but appeared to extend to external reports in the second.

Sweeney (1932) also supported the view that holding gains should not be treated as income, being capital adjustments. However, after making general purchasing power adjustments to the holding gain to eliminate the inflationary element, he further advocated the inclusion of real holding gains in the income statement once they had been realised (thus, presumably making them available for distributions).

The Dutch view on the treatment of holdings is evidenced in the writings of Limperg (1964) in the 1920s and 1930s. Consistently, he argued that holding gains were not income and should be taken to a nondistributable reserve. This is compatible with a physical capital maintenance approach. Holding losses were also recommended to be charged against the aforementioned reserve so long as there were gains at its credit to cover them. Thereafter, when the reserve was exhausted, Limperg suggested holding losses should reduce income, thereby implying a switch to financial capital maintenance. No particular reason seems to have been forthcoming to explain this apparent inconsistency in his accounting arguments.

In summary, it can therefore be seen that the problem of the treatment of holding gains was well recognised in the early 1900s, and usually debated within the context of writings on income and capital involving aspects of physical capital maintenance. The consensus appeared to be for the recognition of holding gains, usually not as income (generally) or distributable income (particularly). The main reason for this approach appeared to be the need to ensure the maintenance of physical capital by retaining funds to aid the replacement of assets at higher costs. However, the recognition and accounting treatment of holding gains within the context of capital maintenance raises questions concerning the changing structure of the capital to be maintained. The latter problem was recognised by the early accounting theorists, although not necessarily to the extent of providing a feasible solution.

Changing Asset Structures and Technologies

Several writers on income and capital matters indicated their awareness of the problem of maintaining capital in physical terms when the nature of the underlying asset structure was changing due to related changes in operating activities and/or technologies. Bauer (1919), for example, when discussing the specific example of accounting for the renewal cost of street cars, wrote of the difficulty of doing so when there was a constantly changing structure of physical assets. He presented this as a problem to be faced by accountants without advocating any particular solution. Martin (1927) also recognised the problem—but merely as one which caused instability in asset valuations, thus making accounting for fixed assets a somewhat more hazardous function than would be the case with a situation of stability. But, again, no solution was prescribed or recommended. Limperg (1964), too, offered no answers, merely suggesting (without definition) that the accounting should allow for "economic replacement"—implying non-identical replacement. This is confirmed by his definition of replacement value as the technically necessary and economically unavoidable cost of the asset concerned at the time of its sale or use.

Sweeney (1927) was far more forthright in his comments on the matter. Because he recognised there would be a decline in the business need for certain assets as others became more desirable resources for the reporting entity, he disagreed with accounting for physical capital and its maintenance. Instead, he (then) favoured the alternative financial capital approach of applying general price-level adjustments to historical cost data to "preserve economic power over goods and services." In other words, he presumably felt that the difficulties associated with changing asset structures were such that the reporting accountant should focus his attention on the more easily identified financial features of capital.

Rorem (1929), on the other hand, took a contrary stance—akin to the one associated with contemporary systems of current cost accounting.[25] Totally committed to the idea of reporting in replacement cost terms, he recognised the problem of technological change, and the problem of obtaining replacement costs for accounting in such circumstances. He therefore suggested that the replacement cost used to value a fixed asset should be adjusted to represent equivalent services to those obtained from the existing asset—that is, similar to the contemporary concept of the modern equivalent asset.[26]

This approach would have been wholeheartedly condemned by Canning (1929). A consistent critic of replacement cost accounting because of its reliance on "fictitious data" and "imponderables," he had this to say of asset structure changes:[27]

> Outlay cost is a real thing—a fact. So, too, will replacement cost *become* a real thing when it is incurred. But because prices of equipment fluctuate, because there are always many alternative ways of getting service, that is, many kinds of serving agents that will do a given kind of work, and because the amount and kind of service needed in an enterprise change with its selling, as well as with its buying, opportunities—because of all these extremely elusive matters it requires a good deal of positive evidence to show on which side of experienced cost per unit of service a future unit cost is likely to lie.
>
> We do not often see old establishments duplicated in new ones. Cost of reproduction new less an allowance for depreciation may be a good working rule in damage suits; it is absurd as a sole rule of going-concern valuation.

Not surprisingly, Canning preferred to account for capital in financial terms—ideally, those of present value, but practically in terms of a mixture of historical costs and net realisable values (when these could be obtained directly). He was not alone in this respect. Paton (1934) was by then arguing against the use of replacement costs, admitting that historical cost accounting could be the best basis for mainstream accounting purposes, with replacement costs only being reported as supplementary data. One of his reasons for this radical change of heart was the specialist complexity of fixed assets which meant that replacement in the same form as the original asset was impossible.

Thus, the problem of continually changing asset structures was not unknown in the 1920s and 1930s, although its discussion was limited (mainly to fixed assets), and usually avoided by advocacy of the adoption of some form of financial capital approach for reporting purposes. The support for the latter can be best evidenced by those writings which discussed the need to maintain capital in general purchasing power terms.

General Purchasing Power Accounting

Financial capital maintenance using general purchasing power techniques gained considerable support during the 1920s and 1930s.

Middleditch (1918) provided the impetus for historical cost adjusted data, but paid little direct attention to ideas of capital maintenance (he suggested losses on monetary items—including inventory as such—should be taken to reserve, and implied that purchasing power gains on liabilities should be treated as income). Paton (1918), on the other hand, argued that information ought to reflect specific price changes rather than changes in the general price level.

By 1920, however, Paton's views on general purchasing power accounting were changing.[28] Although favouring replacement cost accounting, he did recognise the difficulty of comparing data at different points of time for income purposes when the general price level was changing. Thus he argued that replacement cost figures should only be used for management purposes. The idea of general purchasing power accounting, however, was not developed further until the work of Sweeney was published in the late 1920s. Indeed, Canning (1929) stated that, although accountants would prefer such a system of accounting, they did not use it because of the lack of data available in time to make the adjustments (that is, presumably general price indices took a considerable time to prepare and publish at that time).

Nevertheless, the work of Sweeney had a considerable influence on income measurement—even if this was not immediate. He did not agree with the maintenance of physical capital in replacement cost accounting and, instead, preferred the maintenance of real capital in order to preserve the reporting entity's economic power over goods and services.[29] In this way, he would adjust historical costs for the general movement in prices, maintaining the outward form of capital (general command over goods) rather than the inner substance (physical assets).[30] By 1931, however, although still roundly condemning the use of pure historical cost and replacement cost systems, he argued at least that the latter was better than the former.[31]

In 1932, his views regarding replacement costs had changed somewhat.[32] Although his main system was based on general purchasing power, he also recommended the introduction of replacement cost changes in the balance sheet on top of the general price level-adjusted data—the total holding gains being taken to reserve until realised when the real element was transferred to income. Thus, he preferred to use a replacement cost system which, when combined with general price-level changes, effectively maintained financial capital—only allowing holding gains to be treated as in-

come when realised, and only to the extent of real price changes. This combined approach was also favoured by Schmidt (1931), although he only regarded speculative holding gains as income.

By 1933, Sweeney (1933b) regarded all realised and unrealised gains as income, advocating their separation in the income statement. These ideas were developed within the context of a combined replacement cost and general price-level system. Monetary gains and losses appeared in the income statement [a point disagreed with by Jones (1935)], but no calculation was made of liability gains or losses of purchasing power. Fixed asset depreciation was measured in general purchasing power terms, thus emphasizing the financial capital approach. A summation of his ideas appeared in two further papers.[33]

The work of Sweeney in the 1920s and 1930s did much to establish a case for adopting an accounting approach which depended on financial capital maintenance. Indeed, he revealed clearly that it was perfectly possible to do this *and* to use replacement costs—that is, financial capital maintenance and replacement cost accounting are not incompatible.[34] This last point is something which remains a matter of confusion for contemporary accountants (for example, the attempt to maintain physical capital and financial capital in the provisions of the most recent current cost accounting recommendations).[35]

Little Support for Sale Values

Sweeney's relatively lone effort in the 1920s and 1930s to promote a financial capital maintenance approach (using general price changes) indicates a possible reluctance to move away from the traditional historical cost-based model. There was also a reluctance to adopt an alternative financial capital strategy which has been consistently and vigorously advocated in more recent times[36]—that is, the use of allocation-free sale values. This reluctance was a deep-seated one, reflecting an unwillingness to account for income before it was realised and a contrary support for the eventual accounting for income as and when it is realised by the entity as a going concern.[37] Paton (1918) was against the use of sale values, believing that to do so was to anticipate income (in a way which he also believed replacement costs did not do—a point which confirms that he regarded holding gains from replacement costs as potential income at that time).

By 1929, however, there were signs of some support for the idea of using sale values for external financial reporting—but only in

limited circumstances. Rorem (1929) advocated the use of replacement costs but, following a "value to the business" rule akin to that seen in most contemporary systems of current cost accounting, suggested the use of net realisable value in circumstances when the latter had fallen below replacement cost. Daines (1929), on the other hand, indicated sale values might be of use in financial reports, but only to creditors interested in liquidity matters. And Canning (1929) advocated the use of sale values for reporting on assets where valuations could be applied directly to the objects concerned —for example, as in inventory for resale [as did MacNeal (1970)]. In fact, so far as these direct valuations were concerned, he indicated merit in reporting historical costs, replacement costs and sale values. His reasons for this approach were less than clear.

Limperg (1964), on the other hand, advocated the occasional use of net realisable values for reporting purposes. His valuation rule was the lower of replacement value and net realisable value, thereby reflecting the sacrifice of the owner of the assets concerned when he sold or used the latter. In addition, he argued that net realisable value, when compared with replacement value, should be the higher of the immediate liquidation value and the sale value on an orderly liquidation. Limperg therefore represented one of the few writers on accounting in the 1920s and 1930s who attempted to use sale values within a mixed value system—somewhat similar to that evidenced in present-day current cost accounting systems.[38]

The above brief commentary reflects a limited attention paid to net realisable value accounting in 1920s and 1930s, a situation not unlike that of today. It meant that the capital debate centered around historical costs, replacement costs and purchasing power units.

Dealing with Price Decreases

A further problem created by replacement cost accounting and physical capital maintenance is the treatment of price decreases. To treat them in a similar way to price increases results in increasing operating income and decreasing financial capital (due to the setting off of holding losses against reserves).[39] Arguably, this problem can be resolved by reverting to a financial capital system when prices are falling[40] but this does not cater for a situation in which some prices are rising and some falling. Brief (1970), when reviewing late nineteenth century contributions to the income and capital debate, indicated that these early writers were aware of the problem of falling prices, and this is clear from the writings of Best (1885)

and Cooper (1888)—capital losses being written off against income for dividend purposes. This awareness was also to be seen in the work of later writers.

Knight (1908), for example, advocated depreciation based on original cost because of the danger of fixed asset values falling. Rastall (1920) pointed out the danger of overstating income by underdepreciating when prices fell. And Sweeney (1930) complained that, if a physical capital maintenance approach were adopted when prices were falling, then the reporting entity's general command over goods would not be maintained (that is, its financial capital in terms of generalised purchasing power would diminish) and, if prices continued to fall, would reduce capital towards zero. This would be no problem so long as the reporting entity continued to invest in and replace assets subject to price decreases. But, as Sweeney indicated, it creates a problem when the entity wishes to diversify into assets subject to different price movements. On the other hand, Daniels (1933) took a pragmatic stance by suggesting that historical cost depreciation policies should be applied in order to allow for both replacement cost increases and decreases. McCowen (1937) felt that a physical capital system, using replacement costs, should be applied irrespective of prices increasing or decreasing—replacement cost accounting reflecting, in his view, how much the reporting entity's selling prices must be adjusted upwards or downwards. Schmidt (1931) also took this approach of consistently accounting for replacement costs, recommending that operating income be distributable (that is, before deduction of holding losses) on the grounds that the entity did not need such income in order to maintain its operations.[41]

Thus, the 1920s and 1930s witnessed three alternative treatments for falling prices: (1) either revert from a physical capital to a financial capital approach; (2) continue to use original costs as a financial capital basis; or (3) consistently apply physical capital accounting irrespective of the direction of price movements. As the problem has not been specifically covered in the United Kingdom current cost accounting provisions,[42] it can be reasonably stated that the early writings were sensitive to a problem which remains today.

Summary and Conclusions

There are many more topics which were debated in the 1920s and 1930s, and which could be analysed in this paper. For example, Sweeney (1931) recommended that all expenses deducted in arriving at income should be in replacement cost terms if such account-

ing was adopted; several writers[43] commented on the problem of using current or future replacement costs for assets yet to be replaced; and the feasibility of finding suitable replacement costs was commented on by at least one writer.[44] Space prevents such issues being discussed further, but the following general conclusions can be drawn from the previous sections: first, the early writers were fully aware of the distinction between financial and physical capital and capital maintenance (some favouring one or the other); secondly, much of the discussion centered around the possible use of replacement costs as an alternative to historical cost accounting, although general purchasing power accounting and net realisable value accounting were discussed also; thirdly, there was a confusion in the minds of early writers about the role of external financial reporting, many of the proposals inadequately distinguishing external reporting from internal reporting and asset management; fourthly, the previous point may have arisen because of the relative brevity and lack of detail in external financial reports of the time; fifthly, replacement cost accounting was viewed not merely as a means of maintaining physical capital but also as a means of adequately determining selling prices in times of changing input prices; sixthly, a considerable amount of the debate in the 1920s and 1930s concerned the aims and uses of financial reports; seventhly, the need for historical cost accounting was debated rather than swept aside; and, finally, some of the problems of replacement cost accounting were not only revealed but analysed in detail—for example, holding gains, changing asset structures and technologies, and price decreases.

It would be wrong to suggest that the early writers on income and capital cited in this paper either adequately recognised and analysed the problems or presented credible solutions. Certainly, there appeared to be little general acceptance by professional accountants and accountancy bodies of the ideas proposed. However, it is disturbing to find the same problems being, at best, debated and, at worst, ignored today in the various alternatives to historical cost accounting. Accountants thus appear to perpetuate problems rather than resolve them, and it is interesting to hypothesise some reasons for this, using the foregoing commentary as a basis:

1. The issue of income and capital measurement is a complex one, involving many problems, and reflecting numerous schools of thought. If a particular system is to be recommended to accountancy practitioners, it is essential that there is an adequate and prior discussion of all relevant matters. The present-day debate over cur-

rent cost accounting has been fragmented, hasty, and lacking in sustained debate involving all interested parties (including users and preparers).

2. The early contributions to the debate reveal, in the complexities of the various arguments, the need to present the major viewpoint in full in order that accountants, businessmen and others are fully apprised of all the issues involved. Current cost accounting proposals have failed to do this, concentrating solely on a limited argument to support them.

3. The reasons for the benefits of a particular reporting system must be fully explained and understood if it is to succeed. The early writers tended to concentrate more on technical matters and less on aims and purposes, and thus major confusions arose over the recommendations. Current cost accounting has suffered a similar fate today.

4. Changing circumstances can alter viewpoints and stances, and the early writers (particularly Paton) were prepared to adapt. This is difficult to handle in a complex area but systems such as current cost accounting must be allowed to change as circumstances dictate. Changing views must never be used as reasons for not changing or for unnecessary doubt regarding the credibility of the system concerned.

5. Finally, given all the problems of attempting to account and report on physical capital, it is of concern to see no attempt made in the early 1900s (or today) to discuss whether or not these problems outweigh the benefits to be gained from an accounting system based on the maintenance of physical capital. The difficulties of defining physical capital, and its changing nature over time, make it a concept with considerable practical problems regarding implementation. The early debate, and the present unrest with it in countries such as the United Kingdom, indicate it may remain a matter of conceptual rather than practical significance.

FOOTNOTES

[1]For example, Accounting Standards Committee, 1980a. Australian Society of Accountants and The Institute of Chartered Accountants in Australia, 1976, 1978. Financial Accounting Standards Board, 1979.

[2]Lemke and Sterling, 1982.

[3]Symposium, 1930.

[4]There was also at the same time a considerable Dutch contribution based on the work of Limperg, 1964. However, because of its inaccessibility, and isolation from the English-speaking literature, it is difficult to integrate it in this paper beyond making relevant mention of Limperg's theory at particular points. The sources for these comments have been Mey, 1966 and Burgert, 1972.

[5]It is interesting to note that the accounting theory of Limperg, 1964, which was developed in the 1920s and 1930s, influenced his students sufficiently to go beyond the debating stage, and to implement a system of accounting containing several features of present-day current cost practice—see, for example, Goudeket, 1960, and Burgert, 1972.

[6]Stockwell, 1909.

[7]Brief, 1976.

[8]Brief, 1976.

[9]Dickinson, 1904. Cole, 1908. Sells, 1908.

[10]Knight, 1908.

[11]Gower, 1919.

[12]Paton, 1920, 1922. Rastall, 1920. Moss, 1923.

[13]By contrast the Dutch debate commenced at about the same time for a somewhat different reason. Limperg, 1964, was concerned about changes in thinking about the economic approach to valuation (particularly regarding business decisions based on marginal utility), and preferred an accounting system for management based on the producer. Thus, economic arguments to aid management accounting practice were the basis for the Dutch debate, rather than the more pragmatic accounting issue of how best to account for fixed assets in practice.

[14]Bauer, 1919, p. 414.

[15]Jackson, 1921, p. 83.

[16]Rorem, 1929, pp. 172-173.

[17]Martin, 1927, p. 123.

[18]This was not the case with Limperg, 1964. His writings make it quite clear that he saw his system of accounting based on replacement values (using a valuation rule of the lower of replacement value and net realisable value) as being primarily for management accounting purposes but also of considerable use for financial accounting. He did not appear to regard it as essential to separate the two functions.

[19]Wedgewood, 1981, p. 3.

[20]Accounting Standards Committee, 1980a.

[21]Litherland, 1951.

[22]This is specially true of the work of Limperg, 1964.

[23]It should be noted that these views are compatible with those of Limperg, 1964, who believed that, on average, the use of replacement costs to determine selling prices would generate sufficient cash to fund asset replacements.

[24]Symposium, 1930.

[25]Accounting Standards Committee, 1980a.

[26]Accounting Standards Committee, 1980b.

[27]Canning, 1929, pp. 254-255.

[28]Paton, 1920.

[29]Sweeney, 1927.

[30]Sweeney, 1930.

[31]Sweeney, 1931.

[32]Sweeney, 1932.

[33]Sweeney, 1934, 1935.

[34]But his was a lone view—arguably one of the leading replacement cost advocates of the time, Limperg, 1964, made no attempt to account for general price-level changes.

[35]Accounting Standards Committee, 1980a.

[36]Chambers, 1966. Sterling, 1970.

[37]Guthrie, 1883. Best, 1885.

[38]For example, Accounting Standards Committee, 1980a.

[39]See Sterling, 1982.

[40]See Lee, 1980. Attention should also be paid to the work of Limperg, 1964, in this respect. He recommended holding losses should be written off against income when they exceeded aggregate holding gains taken to reserve.

[41]Note should be taken, however, of the aforementioned objection of Sweeney.

[42]Accounting Standards Committee, 1980a.

[43]Bauer, 1919. Scott, 1929. Paton, 1932. Crandell, 1935.

[44]Rorem, 1929.

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